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## ABSTRACT

Until recently, computer technology has been used as a glorified worksheet, word processor, and CD-ROM interactive reader. Now, technology can move well beyond these basic functions into improving literacy skills and strategies, problem solving, and communication. This paper addresses methods in which a balanced literacy program, wherein the richness of whole language is combined with the structure of traditional approaches, can be augmented using technologies in new and exciting ways. The paper also considers some of the problems and difficulties teachers encounter in trying to advance the use of computer technology in the classroom. Contains 21 references. (NKA)

# **Integrating Computer Technology into a Balanced Literacy Approach: Beyond Interactive Books and Word Processors**

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**Integrating Technology into a Balanced Literacy Approach:  
Beyond Interactive Books and Word Processors**

Until recently, computer technology has been used as a glorified worksheet, word processor, and CD-ROM interactive reader. Now, technology can move well beyond these basic functions into improving literacy skills and strategies, problem solving, and communication. This presentation will address methods in which a balanced literacy program, wherein the richness of whole language is combined with the structure of traditional approaches, can be augmented using technologies in new and exciting ways.

Integrating Technology into a Balanced Literacy Approach:  
Beyond Interactive Books and Word Processors

The arrival of the computer in classrooms is creating an opportunity to change the look of literacy in schools across the nation. In 1998, Jerald reported that at least one computer was found in approximately 75% of all the classrooms in the United States; he further stated that 85% of our schools were connected to the internet. These technologies have been and are used for a variety of purposes and are “an educational tool that can be well used or badly misused, like all other technology and teaching materials” (Leu & Kinzer, 1999, p. 626). For example, they have been used to teach, assist student study, provide technology learning opportunities, and to help students more efficiently perform school-based tasks (Becker, 1991). However, most of these uses seem to be aimed at helping teachers teach, rather than helping students learn.

Interestingly, over a decade ago, Goldberg & Sherwood (1983) developed a model for computer use which included five more student-oriented areas: learning with computers, learning about thinking with computers, learning from computers, managing learning with computers, and learning about computers. Recently, Carlson (2000) listed six uses of computers in classrooms: (a) access information, (b) present information, (c) play games and participate in simulations, (d) drill and practice, (e) manage time and student flow, and (f) expose students to material in more unstructured ways. In both the Goldberg-Sherwood and Carlson models, only managing learning with computers was primarily teacher oriented. Further, Leu & Kinzer (1999) posit that all computer-based activities in which students and teachers engage can still be assigned to one of these classifications.

Rogers (1997) reminded us that the needs of students should be the primary concern as computer use is integrated into classroom instruction. He suggests that students believe the best use of computers is to communicate with others, both to find and share information. Hence,

enhanced ability to access a knowledge base--estimated to double every 5.5 years (Grabe & Grabe, 1998)--and increased opportunities for Internet communication make the computer a tool which must be reckoned with. Rogers reiterates an emerging philosophy that computers are *tools* rather than *silver bullets* aimed at perfecting the education process.

Carlson (2000), Technology Director in the Beaverton School District in Oregon, lists word processors, multimedia programs, timeline and project management software, email, research and reference software, the world wide web and internet, spread sheets, graphing calculators, and data bases as the tools 21<sup>st</sup> century learners must be capable of using. He indicates, however, "We are often still teaching children to use new tools for old purposes." To use these tools effectively in the classroom, Newby, Stepich, Lehmann, & Russell (1996) suggest that teachers ask themselves a number of questions about their use.

In terms of planning:

How will the computer effect the student's approach to the task?

What do they already know about the task?

How will the computer impact the teacher's instructional design?

How will the computer effect motivation?

How will the computer improve student and/or teacher efficiency?

In terms of implementation:

How can/will the computer assist and impact the students' learning experience?

How can the computer increase teacher efficiency during instruction?

In terms of evaluation:

How can the computer be used to assist in evaluating the degree of student learning that has occurred?

How can the computer be used to assist in the generation of teacher and student feedback?

How can the computer be used to measure the effectiveness, efficiency and appeal of instruction?

Along with the above questions and as classroom computer use increases, it stands to reason that the computer literacy of students must be considered. Montag-Torardi (1997) define computer literacy this way:

... an understanding of computer characteristics, capabilities, and applications, as well as an ability to implement this knowledge in a skillful, productive use of computer applications suitable to individual roles in society. (p. 118).

Teachers must ask themselves, “How do we accomplish the task of integrating the use of the computer in a manner that allows productive and appropriate classroom use?” This paper briefly examines the difficulties faced by teachers in integrating the use of technology into the classroom, provides a short description of what balanced literacy instruction looks like in classrooms, briefly discusses the possibilities for classroom use of computer technologies, and lists some of the specific practices of teachers in which this goal is met within the parameters of balanced literacy instruction.

#### Difficulties encountered in integration of computers

The major difficulties teachers face fall into three categories—financial, temporal, and knowledge. The financial problems seem to be the lesser of the three. Funding sources range from federal grants and education funds to those donated by private institutions. Large amounts

of money designated for use in education are earmarked to pay for the purchase of computers and software. Some of the funds are also designated to pay for training of teachers and students in the use of the hard- and software. Schools with limited funds enter into partnerships with local businesses in which the local business partner donates sums of money for the purchase of equipment or donate recently upgraded equipment to the school. Local parent-teacher organizations earmark large amounts of money acquired through fundraisers for use in upgrading and repairing school equipment. But in spite of these funding sources, schools are often several generations behind their corporate partners in available equipment and software and are often forced to use cast-off and outdated equipment. They are often faced with trying to use a limited number of computers compared to the number of students and lack projection equipment to demonstrate possible uses to students. The schools often lack file and device sharing equipment and software, limiting the ability of students to store files and work cooperatively. Finally, training of teachers in the use of software is often left unfunded, placing the burden of the cost of training on the shoulders of the teacher.

Time is the another major factor inhibiting the use of computers in classrooms. Teachers are already burdened with time constraints resulting from the need to cover the curriculum, be all things to all students, and maintain certification. Finding time to learn how to use the computers they have is a difficult proposition at best. Those teachers who are dedicated must find time to learn about training while attending summer workshops and conferences in reading, writing, mathematics and science. Workshops are often short and by their very nature require little application of the software that is demonstrated. Outside the difficulty of learning how to use the computer, teachers must try to fit computer use into already crowded curricula. In addition, they do not have the time to search through and preview the burgeoning number of software titles,

geared toward education, to find those applications most suited to particular curricula partly due to lack of off-line web capturing software which would allow them to preview and select material off-line. And finally, the computer lines for schools are often inadequate, severely limiting the time and speed of access to the Internet and World Wide Web.

Knowledge of the use of the computer is another significant factor. Teachers are often lacking in the necessary training to use the specific hardware and software available. Student knowledge may also be insufficient to use the tools, and often, teachers push students directly into computer groups without providing the necessary preliminary training in group work and software and hardware use (Carlson, 2000). Carlson indicates that task completion rather than problem solving and learning become the major focus of classrooms in which the computer is used extensively.

Other significant problems related to knowledge include lack of feedback from teachers during and after instruction, primary focus on recordkeeping without attention to skill generalizations, and difficulties related to unstructured exposure to computer and Internet resources. This lack of structure results in little or no purpose for searching for information, preparation, to find and use the information, feedback during search, and supervision of the search. Learning then becomes serendipitous.

Further difficulties include use of electronic material without understanding how to search for and call out material thus creating inappropriate non-learning; i. e. too much attention paid to the glitzy things computers can do, like morphing, playing with fonts and page layout, and turning students into technology aids instead of learners. Gaming and simulations, both of which could be powerful learning tools, also suffer from lack of preteaching and organization, feedback and discussion, and review of options during their use.



Other significant difficulties include lack of hardware and software technical support within the school, inability to deal with unexpected computer failure when attempting to use computers as a teaching tool, power failures and surges, and frustration at not knowing what to do when a computer crisis occurs. There are also difficulties related to the students; perhaps the most significant of these is lack of keyboarding skills. Fry (1997) suggests that students should learn these skills as early as the third grade--typically this is not the case. It is also the case that many children do not have access to a home computer, thus they find themselves behind many of their peers in terms of computer literacy. In spite of these difficulties, it appears that the computer is an extremely powerful tool that can be used to enhance classroom instruction.

#### Balanced literacy instruction

The term balance implies a state of equilibrium between a number of different entities where reading to, with and by children is an important part of literacy instruction. In balanced literacy instruction, the major instructional strands are skills instruction and practice, oral reading, reading at the instructional level, reading at the independent level, and developmental writing (Reutzel & Cooter, 2000). Further, balanced literacy classrooms include reading and writing activities centered around each of these strands. Thus, reading instruction might consist of the following content:

- phonemic awareness exercises or using magnetic letters when teaching skills,
- teacher reading aloud to the class or shared reading among the students during oral reading time,
- small group guided reading or literacy circles during instructional reading time,
- sustained silent reading or buddy reading during independent reading time, and

- book making or writing aloud during developmental writing instruction.

Similarly, writing instruction in a balanced classroom might look like this:

- word wall work or spelling practice during skill instruction,
- developing graphic organizers or rewriting story endings during or at the conclusion of oral reading instruction,
- adding to personal vocabulary dictionaries or writing story grammars during instructional reading level instruction,
- writing books or maintaining journals during the independent reading instruction, and
- interactive or independent writing during developmental writing instruction.

In addition, the current definition of literacy espoused by the International Reading Association and the National Council of Teachers of English (1994), includes speaking, listening, viewing, and visually representing in addition to reading and writing. The common thread through these six areas is the use of language to facilitate their implementation into classrooms. It is clear that all six aspects should be included when dealing with literacy in today's highly technological society and match the balanced literacy activities in reading and writing. General classroom activities would then include the following:

- the use of email,
- web page construction,
- learning how to use data bases, word processors, spread sheets, and presentation programs, and
- learning how to use the internet as a source of information, among other activities.

One other notion seems to be critical in creating a classroom where a balanced approach to literacy instruction is the standard, and that is engaged learning. Santa (1997) sums up the notion of engaged reading instruction.

Integrating curriculum, promoting extensive reading, applying learning strategies, and involving children in their own assessments are key factors for creating environments for literacy engagement. (p. 231)

Along a similar line of thought, Kist (2000) describes new literacy classrooms of the 21<sup>st</sup> century as having five characteristics:

... they feature ongoing, continuous usage of multiple forms of representation; explicit discussions of symbol usage currently and throughout history; ongoing metadialogues in an atmosphere of cognitive pluralism; a balance of individualized and collaborative activities; and evidence of active, engaged learners. (p. 712)

Clearly, the use of current technologies will increase literacy engagement, using multiple forms of representation as described by Kist, and would most likely include activities such as those described by Gonzales & Thompson (1998):

- laser disc technology in combination with an authoring tool, such as HyperStudio (1995),
- storywriting with media authoring as with Story Book Weaver (1993),
- simulations providing contexts in which students can role play and practice decision-making and problem-solving skills,

- database activities, used in conjunction with problem-solving and activities for purposeful collaboration, reading, writing, sorting, creating, and reporting; and
- inquiry-based lessons using information from the internet in combination with classroom literature and other resources, such as with Webquests (Dodge, 1997).

### Computer use tied to balanced literacy instruction

For each of the instructional strands that make up balanced literacy instruction, there are numerous computer applications that can be used to enhance classroom instruction. For example, skills instruction and practiced can be enhanced by using simple game programs or even learning how to use spell checkers and grammar checkers in standard word processors, presentation programs, or data-bases and spreadsheets. Using "Living Books," by Broderbund, allows children to read alone, read with the computer, or have the computer read to them. Word processors and semantic mapping programs can be used to deal with the written aspects of oral reading instruction.

Working with students at their independent level of instruction provides many opportunities for computer use:

- writing with word processors,
- using spreadsheets and databases to organize and analyze data,
- developing multimedia presentations for class work,
- organizing problem solving tasks using time-line and project management programs,
- creating brochures with graphics programs,
- developing web sites to share and gather information, and

- searching the internet and CD-ROM based encyclopedias and other database like sources are all examples of computer based literacy instruction.

Reading electronic literature, writing in journals, and making books are only a few of the examples for independent reading instruction. Finally, the possibilities for developmental and process writing instruction (Calkins, 1994) are limited only by the imagination of the student:

- developing web sites,
- creating documents of all types for publication, classroom and school newspapers or yearbooks,
- writing up science experiments,
- developing subject –based list serves,
- creating personal portfolios, etc.

#### Examples of classroom instruction enhancement through technology use

Nearly everything that is currently being done in the classroom can be done with the computer, a tool that is motivating and provides great possibilities for enhancement of normal paper and pencil or lecture type formats—enhancement resulting from inclusion of graphics, multimedia, and increased ability to succeed in terms of productivity and efficiency. For example, fourth graders make multimedia alphabet books for use by and as a model for kindergartners and first graders who will use them to learn skills and strategies associated with phonemic awareness.

To enhance oral reading skills, students are exposed to CD-ROM based books where they can choose to have the book read to them, read along with the computer, or read alone. In addition to these computer "books," children can generate time lines, or story grammars to go along with the books they read or which are read to them. Instructional level reading can be

enhanced through the use of personal dictionaries, created and maintained with the computer in word processing programs. Students can also engage in email based literature circles, or book discussions with children all over the world. Independent reading can be fostered through reading online magazines and books, and by having students write in response journals. Reading with "reading buddies" can be included in online reading periods, as well. Finally, opportunities for developmental writing are plentiful. Bookmaking projects are easily accomplished with the computer, as well as electronic mailing lists, web page creation, creating presentations of materials read to share with classmates, and creating classroom newspapers and magazines. In each of these cases, the projects and assignments can be adjusted in difficulty, reading level, and sophistication to meet the needs of the particular students.

### Conclusions and implications

Carlson (2000) sums up the proper use of computers and other technologies in classrooms. They are tools that can be used to enhance education. Teachers need to stress their own personal learning on the computer and model it. They need to promote the interactive ability of the computer that promotes engaged learning. They should only be used when it is appropriate and when the specific value of their use is readily recognizable. Their use should require purposeful activities. Teachers must insure that the prerequisite skills are developed in the students prior to use. And finally, Carlson reminds us that computers are tools that are part of the planning process, not the planning.

With these teacher responsibilities in mind, using the computer to enhance instruction in a balanced literacy program can be a very powerful part of the school curriculum. The literacy of every student is critical to every school in the nation. Current research leans toward a balanced

approach to literacy instruction. Computers and their associated technologies are an integral part of society, and schools should take advantage of them to enhance the instruction of all children.

The use of the computer can be integrated into all phases of balanced literacy instruction.

Schools need to provide training and support for teachers, thus giving them the tools necessary to appropriately prepare our children for the future. In Utah, at least, a statewide effort is directed at meeting the needs of students in all of these critical areas.

## References

Becker, H. (1991). How computers are used in United States schools: Basic data from the 1989 I.E.A. computers in education survey. Journal of Educational Computing Research, 7(4), 385-406.

Calkins, L. M. (1994). The art of teaching writing (new ed.). Portsmouth, NH: Heinemann Educational Books.

Carlson, S. (2000). Strategic Instruction Management. Presentation made at the University of Kansas Center for Research and Learning Northwest Conference, February, 5 & 6, 2000, Las Vegas, NV.

Dodge, B. (1997). The Webquest Page [on-line]. Available at: <http://edweb.sdsu.edu/webquest/webquest.html>

Fry, E. (1997). Computer keyboarding for beginners. Laguna Beach, CA: Laguna Beach Educational Books.

Goldberg, K. & Sherwood, R. D. (1983). Microcomputers in education: A parent's guide. New York, NY: Wiley.

Gonzales, C. (1997). Webquests: what are they? [on-line]. Available at: [http://www-education.nmsu.edu:80000/webquest/wq\\_intro.html](http://www-education.nmsu.edu:80000/webquest/wq_intro.html)

Gonzales, C. & Thompson, V. (1998). Reciprocal mentoring in technology use: Reflecting with a literacy educator. Journal of Information Technology for Teacher Education, 7, 2, 163-177.

Grabe, M., & Grabe, C. (1998). Integrating technology for meaningful learning. Boston, MA: Houghton Mifflin.

HyperStudio 3.0.6n [computer software] (1995). El Cajon: Roger Wagner.



- International Reading Association and National Council of Teachers of English (1994). Standards for the English Language Arts. Newark, DE: International Reading Association.
- Jerald, C. (1998). By the numbers. Education Week on the Web. Copyright: Educational Projects in Education. Available at: <http://www.edweek.org/sreports/tc98/data/exsum.htm>
- Living Books (computer software). Novato, CA: Broderbund Software, Inc.
- Kist, W. (2000). Beginning to create the new literacy classroom: What does the new literacy look like? Journal of Adult and Adolescent Literacy 43(8), 710-718.
- Leu, D. J., & Kinzer, C. K. (1999). Effective literacy instruction, (4th ed.). Englewood Cliffs, NJ: Merrill.
- Montag-Torardi (1997). In M. Simonson, & A. Thompson Educational Computing Foundations (3rd ed.) (p. 118). Upper Saddle River, NJ: Prentice-Hall.
- Newby, T. J., Stepich, D. A., Lehman, J. D., & Russell, J. D. (1996). Instructional Technology for teaching and learning. Englewood Cliffs, NJ: Merrill.
- Reutzel, D. R., & Cooter, R. B., Jr. (2000). Teaching children to read: putting the pieces together (3rd ed.). Upper Saddle River, NJ: Merrill.
- Rogers, A. (1997). Harnessing the power of the web: A tutorial. Armonk, NY: Copyright © Global School Net Foundation. Available at: <http://www.gsn.org/web/intro/index.htm>
- Santa, C. M. (1997). School change and literacy engagement: Preparing teaching and learning environments. In J. T. Guthrie & A. Wigfield (Eds.) Reading engagement: Motivating readers through integrated instruction (pp. 218-233). Newark, DE: International Reading Association.
- Storybook Weaver 1.0 [Computer software] (1993). Minneapolis: MECC.



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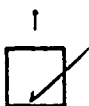
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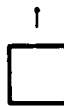
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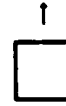
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